

REMARKS

Claims 1, 2 and 4-118 are pending in the application. Claims 6,11, 14, 41 and 43 have been allowed. Claims 18-39, 44-94, and 97-108 have been withdrawn, as they are drawn to a separate invention not previously elected for examination. In view of the Examiner's earlier restriction requirement, Applicant retains the right to present claims 18-39, 44-94, and 97-108 in a divisional application. Claims 109-118 have been added. Claims 7, 8, 11, 13, 15-17, and 42 have been cancelled without prejudice to their underlying subject matter. Claims 1, 2, 4, 5, 9, 10, 12, 40, and 95 have been amended to further clarify the electrode structure of the present invention.

Claim Objections

Claims 2, 8, 13, 16-17, and 96 are objected to as being dependent upon a rejected base claim. Applicant respectfully submits that the objection to claims 2 and 96 are now moot in light of currently amended claims 1 and 95. Applicant further submits that objections to claims 8, 13, and 16-17 are now moot as these claims have been cancelled.

35 U.S.C. § 112 Rejections

Claims 4-5 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicant respectfully submits that the rejection is moot in light of currently amended claims 1, 4, and 5.

35 U.S.C. § 102 Rejections

Claims 1, 9-10, 12, 40, and 95 stand rejected under 35 U.S.C. § 102(a) as being anticipated by Dalton et al. (US 2002/0145200 A1) ("Dalton"). Applicant respectfully traverses this rejection.

The claimed invention relates to an electrode structure for use in integrated circuits and more particularly to electrode structures that exhibit good adhesion between different conductive layers during fabrication. As such, currently amended independent claim 1 recites an electrode structure comprising:

- a first layer of conductive material;
- a dielectric layer formed on a surface of the first layer;
- an opening formed in the dielectric layer to expose a portion of the surface of the first layer;
- an oxide binding layer formed over said dielectric layer and over said exposed portion of the surface of the first layer;
- and
- a second layer of conductive material formed on the binding layer.

Such a device is not anticipated by Dalton.

Dalton does not disclose all the limitations of amended claim 1. Specifically, Dalton fails to disclose “an oxide binding layer.” Instead, Dalton discloses an optional liner layer (26), designed to “prevent the diffusion of Cu into the dielectric layers.” (Paragraph 51). Suitable liner layer materials disclosed by Dalton include TiN, TaN, W, WN, and Cr. (Paragraph 51). Citing U.S. Patent No. 6,184,477 to Tanahashi (Tanahashi), the Office Action asserts that the materials used in Dalton’s liner layer (24) inherently form a binding layer as claimed in the present invention. (Office Action at pages 2-3). Tanahashi relates to a multi-layer circuit substrate designed to ensure uniform impedance characteristics for signal conductors. (Abstract). As such, Tanahashi discloses a structure wherein a metal layer, such as copper, silver, or gold, is adhered to an insulating layer, which is formed from a resin material, via an adhesion layer formed from chromium, titanium, molybdenum, or niobium (Col. 16, lines 44-63).

Claim 1, as amended, recites oxide binding layers. Dalton, however, recites only metal and metal nitride liner layers. Thus, even if the liner layers of Dalton inherently contain the binding properties disclosed in Tanahashi, Dalton fails to disclose an oxide binding layer as required by claim 1. Since all of the limitations of claim 1 are not disclosed by Dalton, the subject matter of claim 1 is not anticipated under 35 U.S.C. § 102(a).

Claims 12, 40, and 95 disclose oxide binding layers similar to that of claim 1 and are therefore also allowable for the reasons given above. Furthermore, claims 2, 4-5, and 9-10, depend from claim 1 and are therefore allowable with claim 1 for the reasons stated above..

Each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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Respectfully submitted,

By 

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